Severe Dyskinesia after Administration of SARS-CoV2 mRNA Vaccine in Parkinson's Disease

Parkinson's disease (PD) patients might be particularly vulnerable to SARS-CoV-2 infection.[1] As approved vaccines are not known/expected to interact with the neurodegenerative process and pharmacological treatment, the Movement Disorder Society released a statement to highly recommend vaccination in PD.[2]

We report on 2 patients, who developed severe dyskinesia after receiving the BNT162b2 (Pfizer/BioNTech) mRNA vaccine. The first patient is a 61-year-old, nondemented lady, with a 11-year history of PD. Her motor conditions were well controlled with no dyskinesia with 125/31.25/200 mg levodopa/carbidopa/entacapone *sex.d.* plus a 200-mg prolonged-release (PR) formulation at night. In June 2021, about 6 hours after her first vaccine dose she developed severe, continuous, generalized dyskinesia without fever and/or confusion. The treatment dose was reduced to 100/25/200-mg levodopa/carbidopa/entacapone *sex.d.* with minimal benefit and subsequently to 75/18.75/200-mg levodopa/carbidopa/entacapone *sex.d.* resulting in the disappearance of dyskinesia and the reemergence of wearing-off. Nonetheless, she deemed this status was preferable and is currently on this regimen after almost 3 weeks after her vaccination. The second patient is a 79-year-old, nondemented lady, with a 5-year history of PD. She had mild wearing-off and occasional slight peak-dose dyskinesia but was fully independent with a stable treatment of 100/25-mg levodopa/carbidopa tid plus a 200-mg PR formulation at night. In June 2021, the day after her second vaccine dose, she developed fever (38°C), confusion, delusions, and continuous severe dyskinesia for 3 days. Laboratory tests revealed an increased D-dimer level (3228 ng/mL). She was treated with paracetamol, and her levodopa was reduced to 350 mg daily. After 2 weeks, she was afebrile, but mild confusion and dyskinesia that are more severe than her baseline persist.

The reasons whereby these patients developed severe dyskinesia, and in one patient delirium, are not clear, but they might have been triggered by systemic inflammatory response.[3] Innate immune response following mRNA vaccination is critical for the initiation of adaptive immunity, but there are no available data in the context of SARS-CoV-2 mRNA vaccines. It has been suggested that antigen-presenting cells stimulate the secretion of type I interferons and other inflammatory cytokines,[4] and this might have increased the permeability of blood–brain barrier and drug availability, thus causing severe dyskinesia. Beyond this, the systemic response might have triggered and/or fostered striatal glia-mediated inflammatory processes, which have been construed to contribute to the genesis of levodopa-induced dyskinesia.[5,6]

We acknowledge that many other patients we care have not developed similar reactions. Moreover, these two patients manifested severe dyskinesia following either the first or the second vaccine dose. This highlights that there is a variability in the response triggered by the vaccine that might likely depend on individual immunological profiles. Although future research should identify individual markers of such and other reactions, clinicians should be aware of this possibility and monitor their patients after they receive their vaccination.

Data Availability Statement

No data are available

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